

3.9 INFRASTRUCTURE

The Proposed Action and its alternatives would produce additional demands on potable water supply, wastewater, stormwater, solid waste, telecommunications, and energy systems. This section identifies current capacities of the infrastructure components and assesses their ability to satisfy increased demand. The ROI used in the analysis includes the sites of the Proposed Action and its alternatives, the city of Biloxi, and the three-county coastal region. Evaluations of infrastructure capacity are based on reviews of existing plans, analysis of trends in infrastructure use, and discussions with service providers and regulatory personnel.

Water supply, wastewater, and stormwater management have been identified as important issues. A more limited analysis is presented for solid waste, telecommunications, and energy utilities because the capacity of these systems is expected to be sufficient to accommodate projected utility demands.

3.9.1 Water Supply

The potable water system supplies a mix of commercial, industrial, residential, and irrigation uses. The supply system consists of groundwater wells, distribution lines, and storage tanks. This analysis focuses on the capacity of existing infrastructure to deliver and store adequate fresh water supplies. The ROI includes the sites of the Proposed Action and its alternatives, the city of Biloxi, and the three-county coastal region. Section 3.3 describes the ability of aquifers to supply adequate quantities of groundwater.

3.9.1.1 Water Supply Systems in the Three-County Region

Aquifers are the dominant source of potable water for the three-county region. Section 3.3 describes the quality and quantity of water produced by Mississippi's coastal aquifers.

Over 150 public water providers operate in the three-county region (EPA, 1999). The following discussion presents a detailed analysis of the city of Biloxi water system and a summary of other large water suppliers in Harrison, Hancock, and Jackson Counties.

City of Biloxi Water System

The city of Biloxi Subdivision Regulations specify uniform standards for the design, materials, and construction of water system facilities. The city also requires development to comply with fire flow standards established by the Southern Building Code Congress International (SBCCI) and the National Fire Protection Association (NFPA).

The city of Biloxi maintains a public water supply for the area south of I-10. The municipal water system consists of two service areas: 1) the Biloxi peninsula system south of Biloxi Back Bay, and 2) the North Biloxi system north of Biloxi Back Bay. ECO Resources, Inc., a private contractor, currently manages the water system.

Table 3.9-1 presents water supply capacity information for the Biloxi peninsula and North Biloxi systems. According to Biloxi's Vision 2020 Comprehensive Plan, the city distributes water through a 100-mile network of water mains of varying size and condition (city of Biloxi, 1996b).

Table 3.9-1
City of Biloxi Water Supply Capacity

Water System¹	Population Served	Active Connections	No. of Tanks	Total Storage Capacity in mgd	No. of Wells	Total Well Field Capacity in mgd
Biloxi Peninsula	44,000	9,972	4	4.0	13	15.38
North Biloxi	5,533	2,063	1	0.2	6	4.50
Total	49,533	12,035	5	4.2	19	19.88

Source: personal communication, W. Vuyovich, Mississippi State Department of Health, Division of Water Supply, to E. Drake, EDAW, September 1, 1999; personal communication, Richard Sullivan, ECO Resources, to E. Drake, EDAW, October 26, 1999.

Notes:

1. Both systems use chlorine treatment of water.

The city has also acquired three small water utilities—French Utilities, Thomas H. Smith Water Company, and Cedar Lake Water Company—that serve approximately 1,400 persons in the newly annexed area. Individual wells, however, serve most of the population in this 34-square-mile area. Private water providers supply the remaining unincorporated areas near the city of Biloxi.

As of 1996, the gaming industry consumed approximately 15 percent of the Biloxi peninsula system's available water supply (city of Biloxi, 1996b). In the Vision 2020 Comprehensive Plan, the city identified water main deficiencies in an area of concentrated casino development along US 90 and Bayview Avenue.

Since 1996, city infrastructure in the Point Cadet and casino areas has expanded to accommodate gaming growth. The east end of the Biloxi peninsula now has a looped water system with a minimum line size of 12 inches (personal communication, J. Porche, City Engineer, City of Biloxi, MS to E. Drake, EDAW, October 1, 1999). The city has also added storage capacity with a new water tank and increased water pressure to satisfy fire flow demands. Fire flow refers to the availability of water at a quantity and pressure sufficient for fire protection purposes. In most instances, current fire flow is sufficient, although low flows occur in the area near Callivet Street and Main Street (personal communication, J. Porche, City Engineer, City of Biloxi, MS to E. Drake, EDAW, October 1, 1999).

According to the FY 1999-2000 capital projects schedule, the city is now planning a new water tank in north Biloxi, an additional well in the Point Cadet area of east Biloxi, and construction of a 12-inch water main from Oak Street to Main Street. The city uses general funds to complete these infrastructure upgrades. Impact fees on commercial development, including casinos, also generate improvement revenue.

1 Water supply infrastructure is adequate to serve current levels of development on the Biloxi
2 peninsula (personal communication, J. Porche, City Engineer, City of Biloxi, MS to E. Drake,
3 EDAW, October 1, 1999). Increased development, however, may require further infrastructure
4 upgrades.

6 Areas of needed system expansion remain in north Biloxi. According to development trends, the
7 north Biloxi water service area will absorb most of the city's future residential growth. Many of
8 the existing system's water lines, which are 4 to 8 inches in diameter, must be upgraded to
9 accommodate these anticipated population increases (city of Biloxi, 1996b). Distribution lines in
10 the small water provider systems serving the unincorporated areas tend to be small; as growth
11 continues north, many of these lines must be upgraded and integrated with the city's water
12 network (city of Biloxi, 1996b).

14 Additionally, existing system water infrastructure in the newly annexed area (see Figure 3.8-2 of
15 annexed area) is not adequate to support expected growth (personal communication, D. Nichols,
16 Chief Administrative Officer, City of Biloxi, MS, to G. Cornell, EDAW, Atlanta, GA, September
17 20, 1999). The city will extend municipal water and sewer service to the area where legally
18 possible and financially feasible. Though specific utility provisions have not yet been identified,
19 the city has pledged, as part of its annexation plan, to invest nearly \$12 million over five years in
20 water and sewer improvements (city of Biloxi, 1999a).

22 Other Water Supply Systems in the Three-County Region

24 Table 3.9-2 summarizes water supply capacity information for 12 large municipal and private
25 water providers in other areas of Hancock, Harrison, and Jackson Counties. Appendix I contains
26 detailed information on each provider.

28 **Table 3.9-2**
29 **Water Supply Capacities in**
30 **Hancock, Harrison, and Jackson Counties**

Population Served	Active Connections	Total Storage Capacity in mgd	Total Well Field Capacity in mgd
194,311	72,188	15.80	84.59

32 Source: personal communication, W. Vuyovich, Mississippi State Department of
33 Health, Division of Water Supply, to E. Drake, EDAW, September 1, 1999

3.9.1.2 Potable Water Use

As of July 1999, the city of Biloxi water system had 11,391 users. Table 3.9-3 presents overall water consumption data for the municipal system. Average water use for the Biloxi peninsula system is 125 gallons per day (gpd) per customer (city of Biloxi, 1996b). Average use in the North Biloxi system is 78 gpd per customer. The city's water supply is sufficient to meet current demand and to satisfy increased water use resulting from population growth (personal communication, R. Sullivan, ECO Resources, City of Biloxi, MS, to E. Drake, EDAW, Atlanta, GA, October 26, 1999).

Table 3.9-3
Public Water Supply Demand in the City of Biloxi

Average Daily Demand ¹ in mgd	Average Daily Demand for Peak Month ² in mgd	Available Supply in mgd
7.91	9.10	19.88

Source: personal communication, Richard Sullivan, ECO Resources, to E. Drake, EDAW, October 26, 1999.

Notes:

1. Average daily demand based on gallons pumped between August 1998 and July 1999.
2. Average daily demand based on peak use in May 1999.

3.9.1.3 Potable Water Infrastructure at Alternative Sites

Table 3.9-4 identifies existing water infrastructure at project sites.

Table 3.9-4
Existing Water Infrastructure at Broadwater and Alternative 3 Sites

	Nearest Water Main		Nearest Well		Nearest Tank	
	Location	Size	Location	Capacity	Location	Capacity
Broadwater	US 90	12-inches	Greater Ave	1.24 mgd	Greater Ave	1.0 mg
Alt 3: A	US 90	8-inches	Maple St	0.63 mgd	Kuhn St	1.0 mg
Alt 3: B	Maple St	12-inches	Maple St	0.63 mgd	Kuhn St	1.0 mg
Alt 3: C	Pine St 7 th St	2-inches 2-inches	Kuhn St	1.45 mgd	Kuhn St	1.0 mg
Alt 3: D	Bayview Ave	6-inches	Kuhn St	1.45 mgd	Kuhn St	1.0 mg
Alt 3: E	Lee St	12-inches	Bradford St	1.15 mgd	Kuhn St	1.0 mg
Alt 3: F	Bayview Ave	12-inches	Bradford St	1.15 mgd	Kuhn St	1.0 mg

Source: city of Biloxi, 1999.

3.9.2 Wastewater

This section focuses on the capacity of infrastructure to collect and treat wastewater before discharge. The public wastewater management system consists of a network for the collection and transport of wastewater to central treatment facilities. After recovering wastewater, plants treat contaminants before discharge into surface waters. Wastewater generators that do not connect to a public wastewater system generally use one of two types of on-site management systems: 1) package plants, and 2) septic tanks and drain fields. A package plant is a small, self-contained sewage treatment facility built to serve a developed area. Septic disposal, typically used by individual households, collects wastewater in an underground tank and then slowly releases the water into a drain field where it is absorbed and filtered by the ground. The ROI used in the wastewater analysis includes the sites of the Proposed Action and its alternatives, the city of Biloxi, and the three-county region. Section 3.3 provides additional information on wastewater discharges in the coastal area.

3.9.2.1 City of Biloxi Sewer System

The city of Biloxi wastewater management system is divided into two service areas: 1) the Biloxi peninsula system, and 2) the North Biloxi system. The system consists of a network of interceptors, which transport wastewater to treatment plants. ECO Resources, Inc., a private contractor, provides customer billing and maintains pumping stations. The city retains responsibility for line construction and rehabilitation and the collection and transport of wastewater to treatment facilities.

As discussed in Section 3.2, soil suitability for septic use in the three coastal counties is low (Holloman, 1998). According to the 1990 census, approximately 20 percent of households in Harrison County used septic systems. Approximately one-quarter of households in Jackson County used septic tanks, while half of households in Hancock County relied on individual on-site disposal systems.

Reliance on septic use in Harrison County is declining. The Harrison County Health Department converts approximately 1,000 to 1,200 unincorporated households to centralized wastewater systems each year (personal communication, C. Bowden, Harrison County Health Department, Orange Grove, MS, and E. Drake, EDAW, Atlanta, GA, September 7, 1999.)

Incorporated Biloxi south of I-10 contains only isolated pockets of septic tanks. According to the FY 1999-2000 capital project schedule, the city will further extend public sewers to the north Biloxi service area. New collector lines will be added along Popps-Ferry Road over a 5- to 6-year period.

Areas of needed sewer expansion remain in the newly annexed portion of the city. Wastewater treatment in this 34-square-mile area consists primarily of individual septic systems and a small lagoon treatment facility. No specific provisions for public wastewater treatment have yet been identified.

Existing city infrastructure has expanded to accommodate growth in gaming along the Biloxi peninsula. The city has allocated millions of dollars to repair sewer infrastructure deficiencies, particularly in the casino row area (Staehling, 1996). According to the FY 1999-2000 capital projects schedule, system upgrades will continue with the planned construction of lift stations and an infiltration and inflow study of the east Biloxi sewer system. Sewer infrastructure is adequate to accommodate current levels of development (personal communication, J. Porche, City Engineer, City of Biloxi, MS to E. Drake, EDAW, Atlanta, GA, October 1, 1999).

3.9.2.2 Wastewater Treatment Facilities in the Three-County Region

Harrison County

The Harrison County Wastewater and Solid Waste Management District (HCWSWMD) operates interceptor sewers, primary pumping stations, and treatment plants for municipalities and the unincorporated areas of Harrison County.

A Board of Directors governs the HCWSWMD. Members consist of mayors from the five county municipalities and a representative from the Harrison County Board of Supervisors. The HCWSWMD is a "flow-through" agency that receives funds from each of its six municipal and county wastewater customers. The municipalities and the county receive bills based on a pro rata share of facility use (Pahlavan, 1998). The HCWSWMD issues bonds to finance wastewater treatment plant expansion.

Table 3.9-5 lists the permitted discharge capacities and current monthly average and peak inflows for wastewater treatment plants managed by HCWSWMD. The table also identifies the treatment capacity available after the plants treat average monthly inflow.

Two wastewater treatment plants (WWTP) serve the Biloxi peninsula – Keegan Bayou and West Biloxi (see Figure 3.9-1). Both plants have an NPDES permit from the MDEQ authorizing the discharge of effluent into the Biloxi Back Bay. Concentration of gaming development has placed increased service demand on the Keegan Bayou WWTP in east Biloxi. By 1996, seven operating casinos discharged into the Keegan Bayou facility. This small plant, which was the second oldest facility in the state, exceeded its designed treatment capacity of 3.4 mgd with inflows of nearly 5.0 mgd (Wade, 1996). A major facility upgrade in 1998 expanded Keegan Bayou's permitted capacity to 10.0 mgd. The facility's reserve capacity of over 40 percent is expected to meet wastewater treatment demands from new hotels and casinos (Baker, 1998a). The HCWSWMD also added a new WWTP at north Gulfport in 1998, reducing the heavy waste load received by the south Gulfport plant.

Table 3.9-5
Harrison County Wastewater Treatment Plant Capacities

Wastewater Treatment Facility	Level of Treatment	Avg. Monthly Inflow (in mgd)	Peak Monthly Inflow (in mgd)	Monthly Avg. Discharge Limitation (in mgd)	Available Treatment Capacity
Keegan Bayou (East Biloxi)	Secondary	5.8	6.6	10.0	42%
West Biloxi	Secondary	8.5	10.8	9.0/June-Nov 11.7/Dec-May	5% ¹
Gulfport South	Secondary	7.6	10.9	10.5/May-Oct 16.0/Nov-April	28% ²
Gulfport North	Tertiary	2.9	4.2	5.5	47%
Long Beach/Pass Christian	Secondary	3.1	4.4	7.0	56%
D'Iberville	Secondary	.83	.99	1.15	28%

Source: personal communication, M. Frieman, MDEQ, Surface Water Division, Municipal Permit Compliance Branch, to E. Drake, EDAW, September 8, 1999; personal communication, P. Vanderfin, HCWSWD, to E. Drake, EDAW, September 9, 1999.

Notes:

1. Based on June through November discharge limitation.
2. Based on May through October discharge limitation.

The West Biloxi plant, which accepts flows from Keesler Air Force Base, east Gulfport, and west Biloxi, operates near its permitted discharge limitation. Only about five percent of the plant's treatment capacity remains. Average monthly flows at West Biloxi exceeded permitted maximum flow during four months in 1998 and once during the first seven months of 1999. There are no current plans for the expansion of this facility (personal communication, J. Porche, City Engineer, City of Biloxi, MS to E. Drake, EDAW, Atlanta, GA, October 1, 1999).

In addition to wastewater volumes produced by casinos, the existing system must manage grease and oil associated with the food and beverage industry. Grease and oil may clog sewer lines during transmission to the plants. Additionally, once recovered at the plants, grease and oil cannot be effectively treated. The HCWSWMD inspects and monitors grease and oil traps and ensures compliance with established oil and grease limitations (Wade, 1996). Violations of the limitation result in fines. This significant enforcement effort has controlled the impact of grease and oil generation on the wastewater system (personal communication, P. Vanderfin, Enforcement Officer, HCWSWMD, Gulfport, MS to E. Drake, EDAW, Inc., Atlanta, GA, September 22, 1999).

Overall, wastewater flows treated by HCWSWMD plants have been generally steady over the past five years (see Appendix D for wastewater flows of municipal discharges). Only the West Biloxi WWTP experienced significant increases in average annual flows, with 16 percent growth between 1993 and 1998. Improved infiltration and inflow control in municipal sewer systems has likely limited growth in total wastewater volumes despite increasing development in Harrison County (personal communication, J. Athanaelos, Comptroller, HCWSWMD, Gulfport,

MS to E. Drake, EDAW, Atlanta, GA, October 1, 1999). Infiltration and inflow occur when stormwater or groundwater enters into the sewer system through cracked pipes, leaky manholes, or improperly connected storm drains, unnecessarily increasing water volumes transported to treatment facilities.

The HCWSWMD has been effective in meeting wastewater demand. Plants show a strong record of operational compliance with state regulations (personal communication, G. Odom, MDEQ, to E. Drake, EDAW, Atlanta, GA, October 29, 1999). Additionally, plant capacity is adequate to satisfy current wastewater flows (personal communication, P. Vanderfin, Enforcement Officer, HCWSWMD, Gulfport, MS to E. Drake, EDAW, Atlanta, GA, September 9, 1999). Population growth on the coast, however, will require corresponding increases in available WWTP capacity. Expansion of treatment plants generally involves a multi-year process of securing necessary environmental permits, locating funding sources, and constructing the facility. The HCWSWMD has shown the institutional ability to expand treatment capabilities in response to rising demand.

Jackson County and Hancock County

Table 3.9-6 presents the average monthly discharge in 1998 for the wastewater plants operating in Jackson and Hancock Counties. The table also presents the permitted treatment capacity remaining after accommodating average monthly flows.

Table 3.9-6
Wastewater Treatment Plant Capacities in Hancock and Jackson Counties

Wastewater Treatment Facility	Location	Average Monthly Discharge in 1998 in mgd	Permitted Treatment Capacity in mgd	Remaining Treatment Capacity
Diamondhead	Hancock County/ St. Louis Bay	0.83	2.5	66.8%
SRWMD Waveland	Hancock County/ St. Louis Bay	3.18	4.9	35.1%
Escatawpa	Jackson County/ Pascagoula	1.23	1.7	27.6%
Gautier	Jackson County/ Pascagoula	1.68	2.1	20.0%
W. Jackson POTW	Jackson County/ Pascagoula	2.69	3.0	10.3%

Source: Staff analysis.

Wastewater treatment capacity in Hancock County is sufficient to meet current demand. Plants have not exceeded sewage treatment capacity during the last five years. Wastewater treatment plants in Jackson County are under greater strain than the Hancock County facilities. The plants have less remaining capacity and all three facilities have had average monthly discharges in excess of permitted levels (see Appendix D for wastewater flows of all municipal WWTPs).

3.9.2.3 Wastewater Infrastructure at Alternative Sites

Table 3.9-7 identifies existing sewer infrastructure near project sites.

**Table 3.9-7
Existing Sewer Infrastructure**

Site	Nearest Sewer Line		Nearest Lift Stations
	Location	Size	
Broadwater	US 90	10-inches	Brady Drive, Hilton, Beauvoir and Railroad, Cavalier Park
Alt 3: A	US 90	10-inches	Education Center, Pine Street
Alt 3: B	3 rd St	10-inches	Cruso
Alt 3: C	5 th St Pine St	8-inches 8-inches	6 th St
Alt 3: D	Bayview Ave	8-inches	Gollotts
Alt 3: E	Bayview Ave	8-inches	Bayview
Alt 3: F	Bayview Ave	8-inches	Bayview

Source: city of Biloxi, 1999.

3.9.3 Stormwater

The stormwater management system consists of physical structures, including curbs, gutters, and pipes, and natural features, such as grass swales, which are used to convey rainwater from developed areas to surface waters. This section evaluates the capacity of infrastructure to collect and adequately drain stormwater. Sections 3.3 and 4.3 evaluate the water quality impacts of stormwater discharge from the Proposed Action and its alternatives.

The ROI used in the analysis includes the sites of the Proposed Action and its alternatives, the stormwater drainage analysis area defined by the Mississippi Department of Natural Resources (See Appendix D for drainage area), and the city of Biloxi. Evaluations of stormwater infrastructure capacity are based on discussions with city of Biloxi staff and a review of stormwater analyses and plans for the Proposed Action.

3.9.3.1 City of Biloxi Stormwater System

The stormwater system in the city of Biloxi provides subsurface drainage with two main outfall areas: Biloxi Back Bay and the Gulf. The city requires development to install storm drainage facilities designed to control runoff quantity, but does not currently require specific stormwater quality control measures.

Stormwater on the peninsula generally flows south from Pass Road to the Gulf in west Biloxi; south from Howard Avenue to the Gulf in east Biloxi; and to the Biloxi Back Bay from those areas north of Pass Road and Howard Avenue. In north Biloxi, stormwater drains to the Biloxi Back Bay (city of Biloxi, 1996b). The system does not currently treat stormwater before discharge into surface waters.

The city has recently upgraded drainage infrastructure north of US 90 by installing larger and longer drainage lines and increasing the size of drain and curb inlets. Main outfall lines in the area now average about 48 inches in diameter. With these improvements, the existing stormwater system functions effectively and has reduced flood events on the peninsula (personal communication, J. Vorpahl, Engineer, City of Biloxi, Biloxi, MS to E. Drake, EDAW, Atlanta, GA, October 18, 1999).

Drainage in north Biloxi is also adequate to accommodate development. The system north of I-10 expands with growth, as the city requires developers to increase the size of drainage structures. The newly annexed area of Biloxi, however, has limited stormwater infrastructure, relying primarily on natural drainage contours (personal communication, J. Vorpahl, Engineer, City of Biloxi, MS to E. Drake, EDAW, Atlanta, GA, October 18, 1999).

3.9.3.2 Stormwater Infrastructure at Alternative Sites

Alternatives 2, 4, and 5

Stormwater runoff south of US 90 is either collected in small pipes or runs overland to discharge directly into the Mississippi Sound without treatment or storage. The area north of US 90 and south of the CSXT rail line drains overland or through a stormwater system to the collection system for the highway. The system discharges untreated runoff under the roadway, through the seawall, and onto the existing beach at five separate outfall pipes (See Figure 3.3-5). These pipes range in size from 24 inches to 42 inches in diameter.

Table 3.9-8 summarizes existing runoff conditions at the Broadwater site based on a 10-year storm event (Type III distribution rainfall distribution) within the MDMR-defined stormwater analysis area. Peak discharge rates reflect current land uses. Peak discharge is the maximum rate of flow of water passing a given point during or after a rainfall event. This flow rate is measured in cubic feet per second (cfs).

Table 3.9-8
Existing Stormwater Conditions at Broadwater Site

Total Acres	Percent Impervious Surface	Acres of Impervious Surface	Total Peak Discharge (cfs)
334	55.4%	184.9	1,180

Source: Baker and staff analysis.

Alternative 3

Table 3.9-9 identifies existing stormwater infrastructure at the Alternative 3 sites.

Table 3.9-9
Existing Stormwater Conditions and Infrastructure at Alternative 3 Sites

Alternative 3	Total Area in Acres	% Impervious Surface	Nearest Stormwater Line	
			Location	Size
A	7.3	75%	US 90	18 inches
B	9.2	49.8%	Cedar Street	24 inches
C	31.7	34.6%	Michael Street	29 inches
			Pine Street	22 inches
D	8.9	29.2%	Crawford Street	24 inches
E	9.2	22.8%	Braun Street	12 inches
F	4.4	42.3%	Braun Street	12 inches

Source: city of Biloxi, 1999.

3.9.4 Solid Waste and Hazardous Waste

Waste can be divided into two broad categories: hazardous and non-hazardous. Hazardous substances pose potential health and safety risks and could cause contamination if released into the surrounding environment. Examples of hazardous wastes include asbestos, underground storage tanks (USTs), and certain chemicals. Non-hazardous wastes can be further divided into: 1) municipal solid waste (MSW), which includes household materials, and non-hazardous commercial and industrial wastes, and 2) construction and demolition (C & D) debris. C & D debris is waste material produced during the construction, renovation, or demolition of structures. Components of C & D debris typically include concrete, asphalt, wood, metals, and land-clearing materials, such as stumps, rocks, and dirt.

This section focuses on the capacity of infrastructure to collect and dispose of the MSW and C & D debris waste stream that would be produced under the Proposed Action and its alternatives. The Proposed Action and its alternatives are not expected to generate any hazardous substances during operation. The section, however, identifies any hazardous materials that could be exposed during on-site construction. The ROI used in the analysis includes the Broadwater and Alternative 3 sites and the three-county region.

3.9.4.1 Solid Waste System

The Mississippi Environmental Quality Permitting Board issues permits for solid waste facilities. The Board reviews applications for new facilities and expansions of existing landfills to ensure compliance with federal and state safety criteria.

1 The State of Mississippi regulates three categories of non-hazardous solid waste landfills: 1)
2 Municipal Solid Waste Landfills receive household refuse and other types of Subtitle D material,
3 such as commercial solid waste, non-hazardous sludge, and industrial solid waste; 2) Class I
4 Rubbish Sites accept C & D debris, brick, concrete, asphalt, natural vegetation, furniture,
5 sawdust and wood shavings, plastic, and metal; and 3) Class II Rubbish Sites receive natural
6 vegetation, brick, concrete, and asphalt. The Harrison County Health Department requires
7 dumpster pads for commercial uses. Pads must be covered and connected to a sewer line or
8 septic tank.

10 The Harris County Wastewater and Solid Waste Management District (HCWSWMD) provides
11 solid waste management services to all Harrison County residential uses with 10 or fewer units
12 and small commercial uses with four or fewer waste containers per pickup. The HCWSWMD
13 contracts with Browning-Ferris, Inc. for household and small commercial waste collection and
14 Waste Management, Inc. for landfill disposal. Large commercial uses hire private haulers
15 operating in the three-county region. The HCWSWMD owns no solid waste facilities and
16 generates funds through monthly residential and dumpster collection charges.

18 The three-county region has one permitted MSW landfill and seven Class I rubbish sites
19 available for construction-generated waste. The Pecan Grove Landfill and Recycling Center,
20 operated by Waste Management, Inc., receives approximately 90 percent of the total solid waste
21 stream produced in the three-county region. Under the terms of the current HCWSWMD
22 contract, the 266 daily tons of household and small commercial waste collected in Harrison
23 County are disposed at this MSW facility in Pass Christian. Pecan Grove also accepts most of
24 the commercial waste from large generators in the three-county region. There is, however, no
25 landfill designated for commercial waste disposal. Private operators may transport commercial
26 solid waste to any receiving facility.

28 *3.9.4.2 Municipal Solid Waste and Construction and Demolition Waste*

30 Current daily disposal at the Pecan Grove Landfill is approximately 1,500 tons. Less than one
31 year of permitted disposal capacity remains (personal communication, B. Warden, MDEQ,
32 Jackson, MS to E. Drake, EDAW, Atlanta, GA, September 17, 1999). Waste Management, Inc.
33 has submitted an application to expand the existing landfill area on its 1,200-acre site, but the
34 proposed expansion is currently in litigation. HCWSWMD is seeking alternatives to disposal at
35 the Pecan Grove facility. Options include the construction and operation of HCWSWMD's own
36 landfill or the transport of waste to other counties or states for disposal. In addition to Pecan
37 Grove, the three-county region also has a small, 100-ton-per-day incineration facility operating in
38 Pascagoula.

40 Even with the possible closure of the Pecan Grove facility, MSW disposal will be available in the
41 three-county region. The 80-acre Central Landfill in Pearl River County, which is approximately
42 80 miles from the city of Biloxi, has an estimated life of 15 to 20 years (personal communication,
43 B. Warden, MDEQ, Jackson, MS to E. Drake, EDAW, Atlanta, GA, September 17, 1999). Solid
44 waste sites in New Orleans and Mobile also offer disposal capacity. Commercial haulers can
45 access these facilities through the use of transfer stations (personal communication, P. Vanderfin,

1 Enforcement Officer, HCWSWMD, Gulfport, MS to E. Drake, EDAW, Atlanta, GA, October 1,
2 1999). Though waste transport to other landfills may entail a somewhat higher transportation
3 cost, adequate MSW disposal capacity can be maintained feasibly through such arrangements.
4

5 Class 1 rubbish sites in the three-county region generally have a disposal capacity adequate to
6 accommodate current C & D waste streams (personal communication, P. Vanderfin,
7 Enforcement Officer, HCWSWMD, Gulfport, MS to E. Drake, EDAW, Atlanta, GA, October 1,
8 1999).
9

10 *3.9.4.3 Assessment of Hazardous Environmental Conditions at Broadwater and Alternative 3* 11 *Sites*

12 *Alternatives 2, 4, and 5*

13
14
15 Site assessments classify the existing Broadwater site as having a low risk of environmental
16 liabilities (Hazclean Environmental Consultants, 1996). The presence of on-site hazardous waste
17 and materials is limited. The site has three active USTs, which are monitored, and several non-
18 functioning septic systems. Given their age and location, the septic systems pose no threat to
19 human health and the environment. Transformers on-site contain polychlorinated biphenyls
20 (PCBs) below the threshold appropriate for their use. The assessment also found asbestos in
21 several buildings. The only other hazardous materials identified were swimming pool chemicals
22 and landscaping fertilizers, pesticides, and herbicides, all of which were stored and handled in
23 compliance with safe practices.
24

25 *Alternative 3*

26
27 Site A. Site A is currently used as a marina and parking lot. The site contains one 20,000-gallon
28 UST, which is partitioned into two cells holding diesel and gasoline. The tank was installed in
29 early 1998 and is equipped with an approved leak detection system. No significant leaks or spills
30 have been reported. The site also has a 500-gallon above-ground storage tank (AST) along the
31 eastern boundary. This AST is used to store waste oil removed from the boats in the marina
32 basin. A secondary containment wall, constructed of concrete blocks, surrounds the tank. There
33 are no visible signs of any spills outside the containment wall. A cover has been constructed
34 over the tank to limit exposure to rain water. The UST and the AST on the site appear to be
35 installed properly and are well-maintained. There is no evidence to indicate a significant spill or
36 release of material from the tanks (Brown and Mitchell, Inc., 1999b).
37

38 Site B. The New Palace Casino is constructing a hotel and associated structures on Site B.
39 Currently, an on-site parking lot serves as a lay-down area for construction materials, such as
40 paint and structural steel. Several dumpsters also contain construction and office debris. Site B
41 has six pole-mounted transformers. Although unconfirmed by representatives of Mississippi
42 Power Company, these transformers are unlikely to contain PCB materials. Based on the
43 assessment, there do not appear to be any significant environmental conditions at Site B (Brown
44 and Mitchell, Inc., 1999b). Site C. Site C is used to manufacture pre-formed concrete products.
45 Small quantities of paints and solvents (mostly water-based) are stored on the site. Oils and fuels

1 are also stored in a general purpose building. Form oil, used to release the concrete from forming
2 molds, is stored in a 55-gallon drum and a 200-gallon tote. (A tote is typically a clear, square
3 plastic container that can be lifted and moved by a forklift or similar equipment.) Although not
4 stored in a covered area, both of these containers are on drip pans to prevent soil contamination.
5 The site also has a 500-gallon AST used for storing diesel fuel for the facility's equipment. This
6 tank is surrounded by a sealed secondary containment system. In addition to the AST, the
7 containment area has a 55-gallon drum, with waste oil generated by equipment maintenance.
8 Based on the assessment, there do not appear to be any significant environmental conditions at
9 Site C (Brown and Mitchell, Inc., 1999b).

11 Site D. Site D currently contains a haul-out and repair operation for large boats. With boat
12 repair, sandblasting, and painting activities occurring on-site, there is a high probability that soil
13 may be contaminated with heavy metals, including copper, lead and zinc, or solvents and other
14 petroleum-based hydrocarbons. The possible presence of heavy metal and solvent contamination
15 in the soil represents a significant environmental condition that would require further study
16 (Brown and Mitchell, Inc., 1999b).

18 Site E. Munro Petroleum operates a bulk fuel terminal at Site E. The site has 21 ASTs for
19 petroleum-based hydrocarbons and underground piping for fuels. An on-site inspection,
20 performed on October 1, 1999, did not reveal any evidence of a significant spill or release of
21 petroleum-based hydrocarbons. There is, however, some evidence of minor staining of soil
22 around the oil/water separator adjacent to the tank farm, and around the drum storage area.
23 These stains appear to be associated with the loading of trucks and the transfer of materials. The
24 stains are confined to adjacent concrete pads and there is no evidence of stained soils or stressed
25 vegetation.

27 Additionally, Site E has approximately 200 to 150 55-gallon drums, which are filled with bulk
28 materials, labeled, and shipped to the customers. The site also receives empty 55-gallon drums.
29 No cleaning, painting, or reconditioning takes place on the site. This activity appears to be a
30 relatively clean operation, but there is some concern that a spill could occur. Site E also has
31 eight pole-mounted transformers. Although unconfirmed with representatives of Mississippi
32 Power Company, the transformers are unlikely to contain PCBs.

34 The presence of 21 ASTs used to store fuel and other petroleum products on the site represents a
35 significant environmental condition. Although there is no evidence to indicate petroleum
36 contamination, significant spills, or any environmental non-compliance in current operations,
37 additional study would likely be required (Brown and Mitchell, Inc., 1999b).

39 Site F. Site F now operates as a seafood processing and cold storage facility. The site has a
40 30,000-gallon AST that contains diesel fuel. A secondary containment system, consisting of a
41 concrete block wall, surrounds the tank. The containment system appears to be in good
42 condition, with no evidence of any leaks or stressed vegetation. A single underground supply
43 line transports the fuel from the storage tank to two on-dock dispensers. The tank and supply
44 line is not equipped with automatic leak detection systems. Since the tank's installation three
45 years ago, no significant spills or leaks have occurred on-site.

1 Lesso Seafood has a National Pollutant Discharge Elimination System (NPDES) permit to
2 discharge wastewater from the shrimp processing activities into the Back Bay of Biloxi. The
3 environmental records do not indicate any current or previous violations of the permit. Site F
4 also has nine pole-mounted transformers. Although unconfirmed with representatives of
5 Mississippi Power Company, the transformers are unlikely to contain PCBs. With the exception
6 of the large AST, there do not appear to be any significant environmental conditions at Site F
7 (Brown and Mitchell, Inc., 1999b).

8 9 **3.9.5 Telecommunications and Energy Systems**

10
11 This section evaluates the capacity of infrastructure to satisfy demands for telecommunications
12 and energy generated by the Proposed Action and its alternatives. Telecommunications,
13 electricity, and natural gas service systems are currently not affected by major infrastructure or
14 environmental constraints. The ROI used in this analysis includes the sites of the Proposed
15 Action and its alternatives and the three-county region. Determinations of available
16 infrastructure capacity are based on discussions with service providers.

17 18 **3.9.5.1 Telecommunications Service**

19
20 BellSouth provides telecommunication services to the sites of the Proposed Action and its
21 alternatives and to the three-county region. Telecommunications capacity is sufficient to meet
22 current demand in the coastal region (personal communication, D. Middleton, BellSouth, to E.
23 Drake, EDAW, Atlanta, GA September 24, 1999). There are no significant constraints on system
24 expansion.

25 26 **3.9.5.2 Electrical Power**

27
28 Mississippi Power provides electrical power distribution to the sites of the Proposed Action and
29 its alternatives and most of the three-county region. Mississippi Power has a generation plant
30 with a capacity of over 1,000 Mw under construction at Plant Daniel in Escatawpa. The new
31 generation will be available by the summer of 2001. With this system upgrade, electrical
32 capacity is capable of meeting current regional demand (personal communication, D. Penney,
33 MS Power to E. Drake, EDAW, Atlanta, GA, September 29, 1999). Sufficient supplies of
34 electric power are available for both residential and industrial uses throughout Harrison County
35 (Harrison County, 1999b). Mississippi Power can provide adequate electric power to any area of
36 the Biloxi peninsula (personal communication, D. Penney, MS Power to E. Drake, EDAW,
37 Atlanta, GA, September 29, 1999).

1 *3.9.5.3 Natural Gas*

2
3 Entex provides natural gas to the entire coastal area through a system of pipelines supplied from
4 the United Gas Pipeline (Harrison County, 1999b). Entex has recently expanded the size of its
5 transmission line from 12 inches to 30 inches, significantly increasing overall system capacity
6 (personal communication, R. Harvey, Operations District Manager, Entex, to E. Drake, EDAW,
7 Atlanta, GA, September 24, 1999). The natural gas supply is adequate to meet current demand in
8 the coastal region, though certain system upgrades would be necessary to deliver gas to particular
9 user sites.

Destination Broadwater EIS

Possible Wastewater Routing to HCWSWMD WWTPs

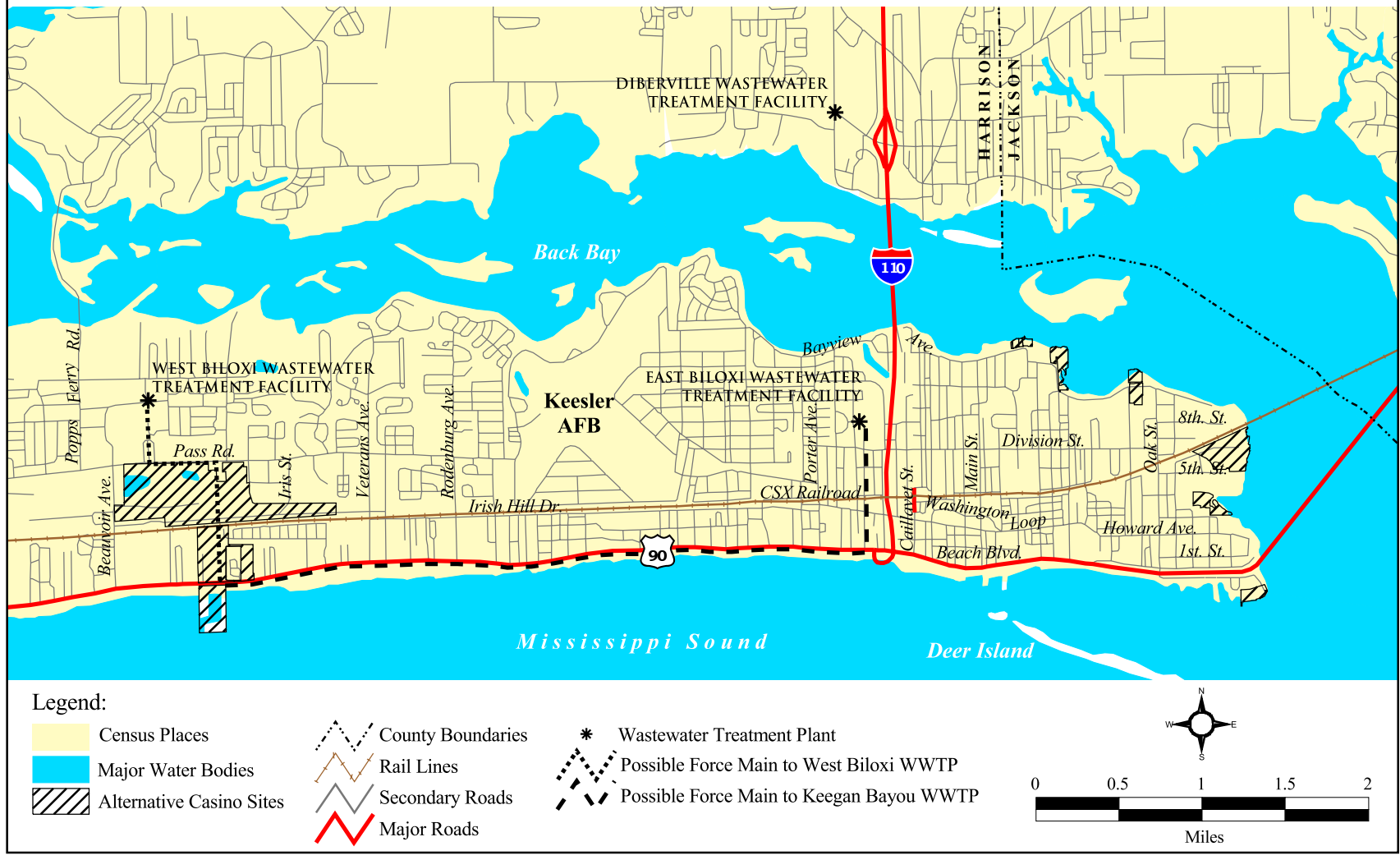


Figure 3.9-1: Possible wastewater routing to HCWSWMD WWTPs